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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/381,839	09/24/1999	GUNTER DOEMENS	P99.1690	4490
30596	7590	03/24/2004	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			LAROSE, COLIN M	
P.O.BOX 8910			ART UNIT	
RESTON, VA 20195			PAPER NUMBER	

2623

DATE MAILED: 03/24/2004

JB

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/381,839

Applicant(s)

DOEMENS ET AL.

Examiner

Colin M. LaRose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9 January 2004 has been entered.

Response to Arguments and Amendments

2. Applicant has amended claim 1 (now claim 4) to include the feature of “the calculating including the use of at least triangulation principles.” As shown below, Di Matteo discloses this feature.

3. Applicant argues that there is no motivation to combine Di Matteo with Poradish – that it would not have been obvious to replace Di Matteo’s color projection system with Poradish’s color projection system, which is driven by a digital micromirror device (DMD).

However, Examiner maintains that the combination is proper. Poradish discloses that projection systems that employ DMDs “can be used in a wide variety of applications” – displays, printers, copiers, fax machines, video cameras, etc. – essentially any application that requires deflected light (column 1, lines 35-52). While Poradish does not expressly disclose using the DMD arrangement to project light onto an object, the concept of projecting patterns of light onto an object is disclosed by Di Matteo in detail. Poradish merely provides the motivation (e.g.

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reduced hardware and faster) to replace the old-style color projection system (like that of Di Matteo) with one employing the new DMD technology.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Di Matteo in view of Poradish.

Regarding claim 4, Di Matteo discloses a method for three-dimensional identification (i.e. identification of three depth planes; column 11, lines 56-58) of an object having an object surface, said method comprising the steps of:

successively projecting a number of encoded illumination patterns (column 1, lines 61-66, and figure 5) to sequentially illuminate said object surface with at least three colors (figure 5) in a beam path through a variable filter (column 5, lines 28-31) onto said object surface for identification of at least three depth planes of said object in a single image;

registering said image of said object with a color camera from a direction different from said beam path (figure 1a); and

calculating a high precision topography of said object surface from said registration in a control and evaluation unit (column 1, lines 28-32, and computer 48, figure 4 that reconstructs the object's surface), the calculating including the use of at least triangulation principles (column 11, lines 56-68 and column 15, lines 1-12: the Z coordinate of points on the object is determined by the color masks shown in figures 2-5, whereas the X and Y coordinates are calculated via

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triangulation principles; see also column 7, lines 56-68 and column 14, lines 57-68 for details of the triangulation).

Di Matteo utilizes a standard projection system and thus is silent to sequentially illuminating a digital micro mirror arrangement via a light source of at least three colors and driving the digital micro mirror arrangement to sequentially illuminate the object.

Poradish discloses the operation of a digital micromirror device (DMD) in a projection system (figure 1). The color wheel 20a ("variable color filter") sequentially transmits red, green, and blue light to the light modulator 30a, which comprises a DMD. Then the light is projected through a lens 32a onto the screen. Column 3, lines 26-53.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Di Matteo by Poradish to illuminate a digital micro mirror arrangement via a light source and drive the digital micro mirror arrangement to sequentially illuminate an object, since Poradish discloses that replacing a full-color projection display with a digital micro mirror arrangement that sequentially displays red, green, and blue light is preferred because the DMD reduces the amount of system hardware (column 1, lines 63-66).

Regarding claim 5, Di Matteo discloses the encoded illumination patterns comprising a stripe pattern having successively varied periodicity (figure 5).

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Di Matteo in view of Poradish, as applied to claim 4, and further in view of disclosed prior art of Pipitone.

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Regarding claim 6, Di Matteo does not disclose the method is used for facial identification.

Pipitone discloses that three-dimensional imaging of faces is a conventional practice (column 1, line 19).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Di Matteo and Poradish by Pipitone to use the three-dimensional imaging method for the identification of faces since Pipitone discloses determining the three-dimensional shape of a human face is used e.g. for security purposes (column 1, line 19).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (703) 306-3489. The examiner can normally be reached Monday through Thursday from 8:00 to 5:30. The examiner can also be reached on alternate Fridays.

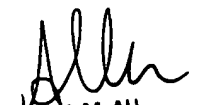
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600 Customer Service Office whose telephone number is (703) 306-0377.

CML

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9 March 2004


AMELIA M. AU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600